

**BY ORDER OF THE COMMANDER  
916TH AIR REFUELING WING**



**916TH AIR REFUELING WING  
INSTRUCTION 21-106**

**9 JANUARY 2012**

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2016*

***Maintenance***

**COMPOSITE TOOL KIT AND  
PERSONAL EQUIPMENT  
PROCEDURES**

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This instruction implements Air Force Policy Directive (AFPD) 21-1, *Air and Space Maintenance*. This instruction extends the guidance of Air Force Instruction (AFI) 21-101 Air Force Reserve Command (AFRC) Supplement, *Aircraft and Equipment Maintenance Management*. This instruction applies to all 916th Air Refueling Wing (ARW) personnel who perform duties on or near the aircraft flight line, (i.e. maintenance personnel, life support, aircrew etc.) Additionally, any other 916 ARW personnel that may be dispatched to the flight line must conform to this document. It is written with Air Force quality principles in mind to provide guidance and to allow some workshop flexibility. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*. Ensure all records created as prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afirms/afirms/rds>

**SUMMARY OF CHANGES**

This interim change changes both the certifying official, as well as the approval authority for this instruction. Additionally, it revises six reference dates to reflect the current reference dates. Lastly, this interim change changes [paragraph 14.2](#) to reflect an inspection requirement of “at least” annually, instead of every six months. A margin bar (|) indicates newly revised material.

## **1. General.**

1.1. This instruction outlines procedures for the management, control, and marking of Composite Tool Kits (CTK) and personal equipment that may be used on the flight line. In addition to the listed regulations in the purpose statement, it also implements the provisions from AFI 11-301 v1, *Aircrew Life Support Equipment (AFE Program)*. Included is guidance for the use of the automated Tool Accountability System (TAS). This operating instruction applies to all personnel assigned to the 916th Air Refueling Wing (ARW) personnel who perform duties on or near the aircraft flight line, (i.e. maintenance personnel, life support, aircrew etc.) Additionally, any other 916 ARW personnel that may be dispatched to the flight line must conform to this document.

## **2. Definition.**

2.1. A CTK is a consolidation of common hand and special tools retained in a securable area, container, bag, or on a shadow board. A painted contrasting shadow, an inlaid shape, or a contrasting outline will identify the location of each tool within the container, shadow board, or CTK. Larger items can be outlined. The presence or absence of any tool, therefore, can be readily and easily determined by visually scanning the CTK.

2.2. Personal equipment is any item issued to an individual separate from tools that personnel use to perform duties on the flight line. (i.e. personal protective equipment, communication headsets, protective gloves etc.)

## **3. Forms Used.**

3.1. AF Form 1297, *Temporary Issue Receipt*; AF Form 2411, *Inspection Document*; AFRC Form 174, *Lost Tool/Object Report*; AFRC Form 175, *Missing/Removed Tools and Equipment*, AFRC Form 177, *Consolidated Tool Kit Inventory and Control Log*.

## **4. Aircrew and Life Support Tool Accountability and Marking.**

4.1. Aircrew and Life Support may use the computer based TAS to track composite tool kits or they may be manually tracked in accordance with AFI 21-101 [Chapter 10](#).

4.2. Aircrew and Life Support will mark CTK's, issued personal equipment and personal protective equipment in accordance with [Figure 1](#) in order to identify that equipment to each individual or shop. No personal tools or equipment that was not issued to the individual and marked are authorized on the flight line or onboard aircraft.

## **5. Tool Accountability System (TAS).**

5.1. TAS is a computer-based system, which uses a unique alphanumeric bar code to identify all tools and equipment. This is the preferred method for tool room operation. Only authorized personnel will have access to the TAS system. The data will be backed up at least once every 30 days to prevent loss of information in the event a power failure or computer malfunction. All CTK automated transaction information will be maintained for thirty days. Tool rooms that use TAS will have a paper backup system for tool control in the event the

TAS system becomes inoperative. Units will maintain a paper inventory and a supply of required forms to be used for tool accountability in the event of a power failure or computer malfunction.

5.2. TAS bar coding may be used to speed the issue and return of CTK's. This system does not replace the requirement for etching tools or marking CTK's. All individually issued tools and CTK's using bar coding are still required to be permanently marked or etched with the CTK designator in accordance with this instruction. When bar coding is employed, labels may be affixed in the location of the tool within the CTK or a master bar code book can be kept at the tool room issue area for tools too small in size to affix a label. Personnel using bar-coding equipment will receive training in its use and safety precautions. Supervisors will evaluate and control all hazards from this equipment in accordance with applicable directives.

## 6. CTK Tool Identification.

6.1. CTK ID numbers are compatible with the TAS. Work centers will mark their CTK's and personal equipment to this numbering system in [Figure 1](#).

**Figure 1. CTK and Personal Equipment Numbering System.**

All CTK numbers will be nine characters in accordance with AFI 21-101.

The 1st and 2d characters, S2, will be the designators for Seymour Johnson Reserves.

The 3d characters will be derived from the squadron and the 4th from the shop.

**A 916th Aircraft Maintenance Squadron**

**M 916th Maintenance Squadron**

**X916th Maintenance Group/Maintenance Operations Flight**

**O 916th Operations Group**

Tools assigned to aircraft will have the last 4 digits of the aircraft tail number plus 0 after the squadron characters.

The last 5 characters are for shop use and can be any combination of letters and/or numbers. Purpose being, to designate the location stored or the individual the item is assigned to.

The shop designation breakdown is as follows:

Shop	Definition	Shop	Definition	Shop	Definition
C	Avionics	X, L	Survival & Life Support (916 OSF)	S	Sheet Metal
D	Dash-21/Sortie Support	N	NDI	V	Machine Shop
E	Electrics/Environmental	O	Not used	A	Age Flight

F	Fuel Cell	P	Propulsion	911	911th ARS
G	Flight Line	Q	Quality Assurance	77	77th ARS
H	Pneudraulics	R	Aero Repair/Wheel & Tire	SE	Stan Eval
I	Inspection Section		M	Mobility	

6.2. Each work center will etch or permanently mark each tool to reflect its CTK or tool room designation. In addition to this identification, work centers may use the TAS bar-coding system. Each shop will maintain a master list of their CTK numbers. They will comply with all other aspects of this instruction.

6.3. Small items/tools that have been placed in a container in accordance with AFI21-101 may be painted red except for the ends to aid in locating these items.

6.4. Work centers that perform multiple “functional area” duties may elect to combine all tools and CTK’s into one primary “functional area.” Under these circumstances all tools will be maintain in one TAS database. An overall POC will be assigned to maintain the database. In addition, one additional subject matter expert POC for each work center involved we be assigned to assist the overall POC with issues concerning their specific tools.

6.5. CTK’s will have streamers attached to the CTK lock key.

6.6. Special purpose CTK’s designed for specific maintenance tasks will comply with the CTK program. These kits may contain bench stock, consumable and specific hazmat items required for that task (HAZMAT handling and storage requirements must be followed for CTK). The type and quantity of these items will be identified on the Master Inventory List (MIL). Bench stock items will be replenished prior to turn in of the kit.

6.7. Tools that are no longer part of the CTK or shadow board will have the respective cutout filled or shadowing removed. This will be accomplished by permanently filling in the tool cutout or by painting over the shadowed area with the appropriate background color of the shadow board.

6.8. All mock-up or test-set tools, required by technical orders, will be marked to identify the equipment to which they belong. Work centers will maintain strict accountability, control, and issue of these types of tools and equipment.

## 7. Master Inventory List.

7.1. Using AFI 21-101, work centers will develop and maintain the Master Inventory List (MIL). This listing will identify all items located in, or attached to, the container or CTK, including common tools, locks, foreign object bags, Custodian Authorization/Custody Receipt Listing (CA/CRL) items, locally manufactured items, tools and bench stock items (i.e., safety wire rolls, etc.). The container, board, foam, key, and the inventory list are not required to be included in the MIL.

7.2. All tool kits will contain an inventory that agrees with the MIL of the kit. MIL will list all available tools and will be used for inventory requirements.

7.3. Many hand tools are covered under warranty by a contractor (i.e. 'Snap On'). These hand tools should be replaced under this contract as needed. Other tools have a limited warranty ranging from several months to years.

7.3.1. Unserviceable warranty tools will be turned in to the effected tool custodian/tool room.

7.3.2. Tool will be entered into the TAS system using the CTK Entry Authorization Letter (EAL) status block and tracked using a replacement tool log. Log will note CTK number, date turned in and date returned to CTK.

7.3.3. Custodian will arrange replacement of the tool with contractor.

7.3.4. Upon receipt of replacement tool, TAS and tool log will be documented and tool returned to appropriate CTK.

7.4. Tools that are replaced through attrition will be etched with the new CTK ID numbers.

## **8. Operation.**

8.1. Work centers will maintain strict accountability, control, and issue of tools and equipment.

8.2. Each CTK must have a designated location for inventory accountability. Tool rooms cages and shops that store tools and equipment must complete an inventory at the beginning and end of each shift. This inventory will be documented on AFRC Form 177 or in TAS.

8.3. Tool room attendant and the individual signing out or in the CTK or equipment are equally responsible for ensuring its completeness. CTK's will not be issued or turned in without a physical inventory of each item on the Master Inventory List.

8.4. Individuals will sign out tools and CTK's on an AF Form 1297, AFRC Form 177 or bar code reader system for CTK and equipment accountability.

8.5. An individual equipment CTK may be established for work center personnel in order to control individual equipment and tool items such as, headsets, communication cords, and ear defenders.

8.6. Items that are carried in pouches or holsters (small pocket flashlight and multi-purpose tool) will have the pouch or holster marked with the CTK number on the exterior with contrasting letters. The tools will have the CTK number etched on it.

8.7. Secure padlocks to CTK's with a non-removable lanyard or chain and etch the padlock and key.

8.8. If a tool or piece equipment breaks or wears out while performing a task it will be returned to the tool custodian or alternate for replacement or warranty repair.

8.9. When possession of tools is transferred from one individual to another on the flight line or at the job site, positive accountability must be maintained. Both individuals will inventory the CTK being transferred. This inventory and transfer will be documented in TAS, on an AF Form 1297, AFRC Form 177, or a combination of both forms. The person giving up possession will turn in the form to the tool room prior to the end of their shift. The tool room will then reassign possession to the gaining individual.

8.10. One-man shops will inventory the CTK at the beginning of the shift and annotate the AFRC Form 177 or TAS product. At the end of the shift, the toolbox will be re-inventoried and anyone familiar with the CTK can sign it in. Once every month the Flight Chief will inventory the tool box and sign the appropriate out or in block.

8.11. A canvas tool bag may be included in a CTK. The canvas bag will be used to carry tools removed from the CTK to a work site on the aircraft. The CTK that the canvas bag was removed from must be in the immediate work area. The bag will be marked with the CTK number on it in contrasting letters.

8.12. Contract field teams, depot teams, and factory representatives, who work on equipment within the unit, will provide 916th Quality Assurance (QA) a copy of their CTK's equipment contents list. These teams will be briefed about this requirement upon arrival on station by QA and they must sign a statement that they were briefed on this requirement. They will comply with tool control as outlined in this operating instruction.

## **9. Replacement and Consumable Hand Tools.**

9.1. Maintenance officers and supervisors will ensure strict controls are established to prevent the pilferage of consumable tools and help control fraud, waste, and abuse. A stock of replacement tools is authorized, but must be kept to a minimum. Spare tools are used to replace broken tools.

9.2. Replacement tools are not issued without receipt or return of the unserviceable tool, or lost tool documentation indicating the tool is has been reported lost.

9.3. Replacement tools are marked with the CTK ID number prior to issue.

## **10. Lost Tool Procedures.**

10.1. Squadron commanders, superintendents, section chiefs and work center supervisors ensure all assigned personnel are familiar with lost tool procedures.

10.2. The person who initially identifies a lost tool will immediately report to the Production Superintendent, and the Maintenance Operations Center (MOC).

10.2.1. The individual reporting the lost tool will enter a Red X in the AFTO Form 781A, *Maintenance Discrepancy and Work Document*, for all affected aircraft. Include in the discrepancy block a description of the lost item and area of suspected loss (if known).

10.2.2. After a thorough search has been conducted and the tool/item is not found initiate an AFRC Form 174, *Lost Tool/Object Report*.

10.3. The Production Superintendent will notify the Maintenance Group Commander, Squadron Maintenance Officer, Squadron Superintendent, the CTK custodian and the 916<sup>th</sup> Quality Assurance (QA) office of the lost tool/item.

10.4. If equipment or aircraft impoundment is required, the maintenance officer or superintendent will follow 916ARWI21-101, *Maintenance Investigations and Impoundment*.

10.5. If lost item is suspected to be on an aircraft that has taxied out or taken off, the production Superintendent will notify (through MOC) the 916 Operations Group Commander and Command Post.

10.5.1. Command Post will notify the Aircraft Commander.

#### 10.6. Aircraft forms documentation.

10.6.1. If tool/item is found clear the discrepancy IAW T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*.

10.6.2. If tool/item is not found the MXG commander or designated representative will determine when the search may be discontinued. Authorization to clear Red X symbols when a tool/item cannot be found will be limited to the Maintenance Group Commander and personnel identified on the Special Certification Roster (SCR).

10.7. A completed copy of the AFRC Form 174 will be forwarded to QA within 24 hours of the lost tool incident.

### 11. Disabled Aircraft Recovery Equipment.

11.1. Disable Aircraft Recovery equipment permanently stored and or located in a trailer must be accounted for in accordance with the procedures in this operating instruction. All equipment stored in the trailer will be inspected every six months. Any tools unaccounted for or equipment missing from the trailer will be treated as a lost tool.

### 12. Local Manufacture Tools.

12.1. Locally manufactured tools and equipment will be produced in accordance with 916 MXG Operating Instruction 21-124, *Local Manufacture Procedures*. Upon completion, locally manufactured items will be controlled as outlined in instruction. Marking will be accomplished per [Figure 1](#).

### 13. Rag Control Procedures.

13.1. All MXG work centers that perform on-equipment maintenance and off-equipment maintenance on aircraft, AGE or component maintenance, will have and use the type of controlled rags supplied by the MXG distribution point listed in para 13.2. These rags will be used for maintenance unless another product is directed by T.O. Each work center will control their authorized quantity of rags in accordance with this directive and any other applicable directives and adhere to the exchange procedures in this instruction. Additionally, absorbent pads/materials other than rags will be controlled in the same manner. ANY other T.O. directed materials (i.e. cheesecloth, tech-wipes, lint-free rags or equivalents) when used for any type of maintenance will be issued and controlled to ensure proper disposal. Any consumables of this nature used within shop maintenance practices or procedures will be controlled to the extent that proper disposal is assured when contaminated with a hazardous substance.

13.2. Maintenance Squadron (MXS) Maintenance Flight Chief will be the MXG Rag Program Point of Contact (POC). The MXG program POC will coordinate required services with 4 FW/CEV Hazardous Waste relating to the rag cleaning contract. The contractor will pick up, clean, and deliver government owned industrial rags (color may vary) to be used in general industrial, shop, and flight line operations, to the MXS PE dock tool room weekly or as scheduled by contractor. The POC will maintain a MXG master rag inventory detailing each work center's total authorized quantity of rags. All changes to the master inventory will be coordinated through that work center's Squadron's Superintendent, then to the program POC. All MXG rags will be roughly 18"x 18" in size when new and may vary more after recurring cleaning.

13.3. The PE dock CTK monitor will be the distribution point POC for all MXG work centers. Clean/dirty rags controlled as part of the exchange process will not be loaded in TAS as part of PE's CTK authorization. These rags will be logged in/out on a program log controlled by PE Dock CTK monitor as prescribed by the MXG Rag Program POC. All MXG work centers will exchange dirty rags for clean rags at the MXS PE dock CTK one for one. The MXS PE dock CTK monitor will log their name, date, quantity of rags exchanged and they will log the exchanging work center and employee name. Both employees will initial the log. If clean rags are not available for exchange, the MXS PE CTK monitor will issue a hand-receipt for that quantity of rags turned in. The employee will notify the work center's supervisor or CTK custodian and provide them the hand receipt.

13.4. Rags for each work center will be bundled (5 each) then identified and tracked in the TAS or accounted for as an inventory item within any CTK. Work center CTKs will control the issue and turn in of rag bundles. Upon turn in, rags will be accounted for first, and then properly secured as clean or dirty. The issuing work center CTK will replace used rags and re-bundle for issue daily. When a work center removes any quantity of rags for cleaning exchange, they will check them out in TAS. If clean rags are not returned within that same shift, TAS will be annotated and the hand receipt kept on file until rags are available. Hand receipt will be kept in the CTK Program Binder.

13.5. Ensure appropriate Personal Protective Equipment (PPE) is used when working with any product types referenced in this instruction that are known or suspected to be contaminated with any known or unknown hazardous chemical/substance. Ensure these materials are properly disposed of.

13.6. UNCONTROLLED RAGS ARE NOT AUTHORIZED.

13.7. Unaccounted for or lost rags are to be treated in the same manner as a lost tool. Lost tool investigation procedures will be accomplished by the responsible work center for any missing rags. Once the paperwork is complete, the CTK custodian may request a replacement rag from the program POC.

13.8. Limited term (not to exceed one week) issue of absorbent material rags is authorized for MXS Pneudraulics shop, Aero Repair shop and Aerospace Ground Equipment (AGE) back shop for fluid control use in drain or drip pans only. When aircraft is in a maintenance hanger, responsible shops may issue absorbent material rags for a limited term (not to exceed one week) to contain fluid in drip pans. Drip pans must be cleaned daily and contaminated rags replaced as necessary. Limited term issue is NOT AUTHORIZED outside of these specific work centers. Limited term will not exceed 1 week before the rags must be turned in and/or re-issued.

13.9. Chemical wipes and Tech wipes are authorized to be used for non-hazardous general shop and aircraft interior cleanup only. These items and/or other absorbent pads/materials are not considered rags for the purpose of this instruction and are not a substitute for another product.

#### **14. Serviceability.**

14.1. All tools will be serviceable, clean, and free of corrosion. Toolboxes will be in good condition with no rust. Foreign Object Damage (FOD) Bags will be in good repair with no holes. FOD will not be left in the CTK.



14.2. All CTKs/Special tools will be inspected at least annually or when the CTK Custodian changes, and a comprehensive inventory of all dispatchable/decentralized tools, non-CA/CRL equipment, and CTKs will be conducted. Refer to AFI 21-101 section 8.5.4. This inspection will be tracked in TAS.

14.3. Broken tools will be logged on AFRC Form 175, *Missing/Removed Tools and Equipment*, until replaced.

#### **15. Security of CTK's and Test Equipment in Vehicles and Golf Carts.**

15.1. Toolboxes stored in the rear of a golf cart and inside vehicles should be closed and locked when not in the restricted area. Pilferable items and small test equipment, i.e., meters and torque wrenches, should be temporarily stored in a toolbox out of view when in the rear of a golf cart.

#### **16. Issue and Control of Personal Equipment.**

16.1. Supervisors are the focal point of all PPE issued. An inventory of all PPE issued, including storage location (if not kept in consolidated tool room) will be maintained. PPE will be identified to each individual in accordance with AFI 21-101 and AFRC Supplement.

ERIC R. JENKINS, Colonel, USAF  
Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

916ARWI 21-101, *Maintenance Investigations and Impounds*, 17 Aug 09

916ARWI 21-101, *Maintenance Investigations and Impounds*, 03 February 2012

916MXG OI 21-124, *Local Manufacture Procedures*, 20 Aug 09

916MXGI 21-124, *Local Manufacture Procedures*, 11 December 2012

AFI21-101, *Aircraft and Equipment Maintenance Management*, 29 June 2006

AFI21-101\_AFRC SUP\_I, *Aircraft and Equipment Maintenance Management*, 03 Feb 07

AFI21-101\_AFRC SUP\_I, *Aircraft and Equipment Maintenance Management*, 24 August 2015

AFMAN 33-363, *Management of Records*, 1 Mar 09

AFPD 21-1, *Air and Space Maintenance*, 25 Feb 03

AFI 11-301, Volume 1, *Aircrew Flight Equipment (AFE) Program*, 2 May 2014

AFI 11-301, Volume 1, *Aircrew Flight Equipment (AFE) Program*, 25 Feb 09

AFPD 21-1, *Air and Space Maintenance*, 29 October 2015

AFMAN 33-363, *Management of Records*, 9 April 2015

T.O.00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*

T.O.00-20-1, AFRC Sup 1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*, 30 May 2014

***Adopted Forms***

AFRC Form 174, *Lost Tool/Object Report*

AFRC Form 175, *Missing/Removed Tools and Equipment*

AFRC Form 177, *Consolidated Tool Kit Inventory and Control Log*

AF Form 1297, *Temporary Issue Receipt*

AF Form 2411, *Inspection Document*

AFTO Form 781A, *Maintenance Discrepancy and Work Document*

AF Form 847, *Recommendation for Change of Publication*

***Abbreviations and Acronyms***

**AF**—Air Force

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFPD**—Air Force Policy Directive  
**AFRC**—Air Force Reserve Command  
**AGE**—Aerospace Ground Equipment  
**AMCI**—Air Mobility Command Instruction  
**AMXS**—Aircraft Maintenance Squadron  
**ARW**—Air Refueling Wing  
**ARWI**—Air Refueling Wing Instruction  
**CA/CRL**—Custodian Authorization/Custody Receipt Listing  
**CC**—Current Commander  
**CTK**—Composite Tool Kit(s)  
**EAL**—Entry Authorization Letter  
**FOD**—Foreign Object Damage  
**FW**—Fighter Wing  
**HAZMAT**—Hazardous Material  
**ID**— Identification  
**ISO**—Isochronal Inspection  
**MIL**—Master Inventory List  
**MOC**—Maintenance Operations Center  
**MXG**—Maintenance Group  
**MXS**—Maintenance Squadron  
**OPR**—Office of Primary Responsibility  
**POC**—Point of Contact  
**PPE**—Personal Protective Equipment  
**QA**—Quality Assurance  
**RDS**—Records Disposition Schedule  
**SCR**—Special Certification Roster  
**TAS**—Tool Accountability System  
**T.O.**—Technical Order